SECTION 09 91 00
PAINTING

PART 1-GENERAL

1.1 DESCRIPTION

A. Section specifies field painting.

B. Section specifies prime coats which may be applied in shop under other sections.

C. Painting includes markers and identity markings.

1.2 RELATED WORK

A. Field prime painting and finish coat of concrete, steel and ferrous metals: Division 03 – Concrete, Division 05 - METALS, Division 08 - OPENINGS, B. Type of Finish, Color, and Gloss Level of Finish Coat: match existing adjacent unless specified otherwise

1.3 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Manufacturer's Literature and Data:
Before work is started, or sample panels are prepared, submit manufacturer's literature, the current Master Painters Institute (MPI) "Approved Product List" indicating brand label, product name and product code as of the date of contract award, will be used to determine compliance with the submittal requirements of this specification. The Contractor may choose to use subsequent MPI "Approved Product List", however, only one list may be used for the entire contract and each coating system is to be from a single manufacturer. All coats on a particular substrate must be from a single manufacturer. No variation from the MPI "Approved Product List" where applicable is acceptable.

C. Sample Panels:

1. After painters' materials have been approved and before work is started install sample panels showing each type of finish and color specified in 24” square test patches in field for review by Project Egnineer and Architect
2. Panels to show colorD. Sample of identity markers if used.

D. Manufacturers' Certificates indicating compliance with specified requirements:

1. Manufacturer's paint substituted for Federal Specification paints meets or exceeds performance of paint specified.
2. High temperature aluminum paint.
3. Epoxy coating.

1.4 DELIVERY AND STORAGE

A. Deliver materials to site in manufacturer's sealed container marked to show following:
   1. Name of manufacturer.
   2. Product type.
   3. Batch number.
   4. Instructions for use.
   5. Safety precautions.

B. In addition to manufacturer's label, provide a label legibly printed as following:
   1. Federal Specification Number, where applicable, and name of material.
   2. Surface upon which material is to be applied.
   3. If paint or other coating, state coat types; prime, body or finish.

C. Maintain space for storage, and handling of painting materials and equipment in a neat and orderly condition to prevent spontaneous combustion from occurring or igniting adjacent items.

D. Store materials at site at least 24 hours before using, at a temperature between 18 and 30 degrees C (65 and 85 degrees F).

1.5 MOCK-UP PANEL

A. After Sample Panel is approved, apply paint as specified to an area, not to exceed 9 m^2 (100 ft^2), selected by Project Engineer.

B. Finish and texture approved by Project Engineer will be used as a standard of quality for remainder of work.

1.6 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by basic designation only.

B. American Conference of Governmental Industrial Hygienists (ACGIH):

ACGIH TLV-BKLT-1992.....Threshold Limit Values (TLV) for Chemical Substances and Physical Agents and Biological Exposure Indices (BEIs)

ACGIH TLV-DOC..........Documentation of Threshold Limit Values and Biological Exposure Indices, (Sixth Edition)

C. American National Standards Institute (ANSI):

A13.1-96.............Scheme for the Identification of Piping Systems

D. American Society for Testing and Materials (ASTM):

D260-86.........Boiled Linseed Oil

E. Commercial Item Description (CID):

A-A-1555.............Water Paint, Powder (Cementitious, White and Colors) (WPC) (cancelled)

F. Master Painters Institute (MPI):

No. 1-04.....Aluminum Paint (AP)
No. 4-04.....Interior/ Exterior Latex Block Filler
No. 9-04.....Exterior Alkyd Enamel MPI Gloss Level 6 (EO)
No. 10-04.....Exterior Latex, Flat (AE)
No. 11-04.....Exterior Latex, Semi-Gloss (AE)
No. 26-04.....Cementitious Galvanized Metal Primer
No. 36-04.....Knot Sealer
No. 43-04.....Interior Satin Latex, MPI Gloss Level 4
No. 44-04.....Interior Low Sheen Latex, MPI Gloss Level 2
No. 45-04.....Interior Primer Sealer
No. 46-04.....Interior Enamel Undercoat
No. 47-04.....Interior Alkyd, Semi-Gloss, MPI Gloss Level 5 (AK)
No. 48-04.....Interior Alkyd, Gloss, MPI Gloss Level 6 (AK)
No. 49-04.....Interior Alkyd, Flat, MPI Gloss Level 1 (AK)
No. 50-04.....Interior Latex Primer Sealer
No. 51-04.....Interior Alkyd, Eggshell, MPI Gloss Level 3
No. 52-04.....Interior Latex, MPI Gloss Level 3 (LE)
No. 53-04.....Interior Latex, Flat, MPI Gloss Level 1 (LE)
No. 54-04.....Interior Latex, Semi-Gloss, MPI Gloss Level 5 (LE)
No. 77-04.....Epoxy Cold Cured, Gloss (EC)
No. 91-04.....Wood Filler Paste
No. 94-04.....Exterior Alkyd, Semi-Gloss (EO)
No. 95-04.....Fast Drying Metal Primer
No. 98-04.....High Build Epoxy Coating
No. 101-04.....Epoxy Anti-Corrosive Metal Primer
No. 108-04.....High Build Epoxy Coating, Low Gloss (EC)
No. 114-04.....Interior Latex, Gloss (LE) and (LG)
No. 119-04.....Exterior Latex, High Gloss (acrylic) (AE)
No. 135-04.....Non-Cementitious Galvanized Primer
No. 138-04.....Interior High Performance Latex, MPI Gloss Level 2 (LF)
No. 139-04.....Interior High Performance Latex, MPI Gloss Level 3 (LL)
No. 140-02.....Interior High Performance Latex, MPI Gloss Level 4
No. 141-04.....Interior High Performance Latex (SG) MPI Gloss Level 5

G. Steel Structures Painting Council (SSPC):
SSPC SP 1-00.....Solvent Cleaning
SSPC SP 2-00.....Hand Tool Cleaning
SSPC SP 3-00.....Power Tool Cleaning

PART 2 - PRODUCTS

2.1 MATERIALS

A. Concrete and Masonry (Including Concrete Masonry Unit Masonry, Columns, etc):

1. LES, Low-Luster Acrylic Enamel Finish: Two finish coats over a primer.

a. Primer: Glidden Professional Gripper, Interior/Exterior Primer Sealer 3210- 1200 OR EQUAL

b. Finish Coats: Glidden Professional DevFlex 4212 HP High Performance Waterborne Acrylic Eggshell Enamel, 4212-xxx OR EQUAL

B. Gypsum Board:

1. LES, Low-Luster Acrylic Enamel Finish: Two finish coats over a primer.

a. Primer: Glidden Professional Gripper, Interior/Exterior Primer Sealer 3210-1200 OR EQUAL

b. Finish Coats: Glidden Professional DevFlex 4212 HP High Performance Waterborne Acrylic Eggshell Enamel, 4212-xxxx OR EQUAL

C. Metal Doors and Door Frames:

1. ASG, Semi-Gloss Acrylic Enamel Finish: Two finish coats over a primer.

a. Primer: Spot prime as needed Glidden Professional Gripper, Interior/Exterior Primer Sealer 3210-1200 OR EQUAL
b. Finish Coats: Glidden Professional Devflex 4216 HP High Performance Waterborne Acrylic Semi-Gloss Enamel, 4216- OR EQUAL

D. Ferrous Metal (Stairway, etc):

1. AFG, Full Gloss Alkyd Enamel Finish: Two finish coats over a primer.
a. Primer: Spot prime as needed Glidden Professional Devguard Multi-Purpose Tank & Structural Primer, 4160

c. Finish Coats: Glidden Professional Devguard Alkyd Industrial Gloss Enamel, 4308

E. Concrete Floor (Previously Painted):
1. OG, Polyurethane base gloss Enamel Finish: Two finish coats over a primer

a. Primer: Anvil #1750 Grip-Tite Primer
b. Finish Coats: Glidden Professional Concrete Coatings Polyurethane Floor Enamel, 3118

F. Plastic Tape:

1. Pigmented vinyl plastic film in colors as specified in Section 09 06 00, SCHEDULE FOR FINISHES or specified.
2. Pressure sensitive adhesive back.
3. Widths as shown.

G. Interior/Exterior Latex Block Filler: MPI 4.
H. Exterior Alkyd Enamel (EO): MPI 9.
I. Exterior Latex, Flat (AE): MPI 10.
J. Exterior Latex, Semi-Gloss (AE): MPI 11.
K. Waterborne Galvanized Primer: MPI 134.
L. Non-Cementitious Galvanized Primer: MPI 135.

2.2 PAINT PROPERTIES

A. Use ready-mixed (including colors), except two component epoxies, polyurethanes, polyesters, paints having metallic powders packaged separately and paints requiring specified additives.
B. Where no requirements are given in the referenced specifications for primers, use primers with pigment and vehicle, compatible with substrate and finish coats specified.

2.3 REGULATORY REQUIREMENTS

A. Paint materials shall conform to the restrictions of the local Environmental and Toxic Control jurisdiction.
   1. Volatile Organic Compounds (VOC): VOC content of paint materials shall not exceed local, state or district requirements.
   2. Lead-Base Paint:
      a. Comply with Section 410 of the Lead-Based Paint Poisoning Prevention Act, as amended, and with implementing regulations promulgated by Secretary of Housing and Urban Development.
      b. Regulations concerning prohibition against use of lead-based paint in federal and federally assisted construction, or rehabilitation of residential structures are set forth in Subpart F, Title 24, Code of Federal Regulations, Department of Housing and Urban Development.
   3. Asbestos: Materials shall not contain asbestos.
   4. Chromate, Cadmium, Mercury, and Silica: Materials shall not contain zinc-chromate, strontium-chromate, Cadmium, mercury or mercury compounds or free crystalline silica.
   5. Human Carcinogens: Materials shall not contain any of the ACGIH-BKLT and ACGHI-DOC confirmed or suspected human carcinogens.
   6. Comply with the Regional Ozone Transport Commission (OTC) regulations regarding Volatile Organic Content (VOC).

PART 3 – EXECUTION

3.1.1 Project Scope

A. All exposes surfaces within work area defined on drawings shall receive new paint finish

3.1 JOB CONDITIONS

A. Safety: Observe required safety regulations and manufacturer's warning and instructions for storage, handling and application of painting materials.
   1. Take necessary precautions to protect personnel and property from hazards due to falls, injuries, toxic fumes, fire, explosion, or other harm.
   2. Deposit soiled cleaning rags and waste materials in metal containers approved for that purpose. Dispose of such items off the site at end of each days work.

B. Atmospheric and Surface Conditions:
   1. Do not apply coating when air or substrate conditions are:
      a. Less than 3 degrees C (5 degrees F) above dew point.
      b. Below 10 degrees C (50 degrees F) or over 35 degrees C (95 degrees F), unless specifically pre-approved by the Contracting Officer and the product manufacturer. Under no circumstances shall application conditions exceed manufacturer recommendations.
   2. Maintain interior temperatures until paint dries hard.
   3. Do no exterior painting when it is windy and dusty.
   4. Do not paint in direct sunlight or on surfaces that the sun will soon warm.
   5. Apply only on clean, dry and frost free surfaces except as follows:
      a. Apply water thinned acrylic and cementitious paints to damp (not wet) surfaces where allowed by manufacturer's printed instructions.
      b. Dampened with a fine mist of water on hot dry days concrete and masonry surfaces to which water thinned acrylic and cementitious paints are applied to prevent excessive suction and to cool surface.

3.2 SURFACE PREPARATION

A. Method of surface preparation is optional, provided results of finish painting produce solid even color and texture specified with no overlays.

B. General:
   1. Remove prefinished items not to be painted such as lighting fixtures, escutcheon plates, hardware, trim, and similar items for reinstallation after paint is dried.
   2. Remove items for reinstallation and complete painting of such items and adjacent areas when item or adjacent surface is not accessible or finish is different.
   3. See other sections of specifications for specified surface conditions and prime coat.

4. Clean surfaces for painting with materials and methods compatible with substrate and specified finish. Remove any residue remaining from cleaning agents used. Do not use solvents, acid, or steam on concrete and masonry.

C. Wood:
1. Sand to a smooth even surface and then dust off.
2. Sand surfaces showing raised grain smooth between each coat.
3. Wipe surface with a tack rag prior to applying finish.
4. Surface painted with an opaque finish:
   a. Coat knots, sap and pitch streaks with MPI 36 (Knot Sealer) before applying paint.
   b. Apply two coats of MPI 36 (Knot Sealer) over large knots.
5. After application of prime or first coat of stain, fill cracks, nail and screw holes, depressions and similar defects with wood filler paste. Sand the surface to make smooth and finish flush with adjacent surface.
6. Before applying finish coat, reapply wood filler paste if required, and sand surface to remove surface blemishes. Finish flush with adjacent surfaces.

D. Ferrous Metals:
1. Remove oil, grease, soil, drawing and cutting compounds, flux and other detrimental foreign matter in accordance with SSPC-SP 1 (Solvent Cleaning).
2. Remove loose mill scale, rust, and paint, by hand or power tool cleaning, as defined in SSPC-SP 2 (Hand Tool Cleaning) and SSPC-SP 3 (Power Tool Cleaning). Exception: where high temperature aluminum paint is used, prepare surface in accordance with paint manufacturer's instructions.
3. Fill dents, holes and similar voids and depressions in flat exposed surfaces of hollow steel doors and frames, access panels, roll-up steel doors and similar items specified to have semi-gloss or gloss finish with TT-F-322D (Filler, Two-Component Type, For Dents, Small Holes and Blow-Holes). Finish flush with adjacent surfaces.
   a. This includes flat head countersunk screws used for permanent anchors.
   b. Do not fill screws of item intended for removal such as glazing beads.
4. Spot prime abraded and damaged areas in shop prime coat which expose bare metal with same type of paint used for prime coat. Feather edge of spot prime to produce smooth finish coat.

5. Spot prime abraded and damaged areas which expose bare metal of factory finished items with paint as recommended by manufacturer of item.

E. Zinc-Coated (Galvanized) Metal Surfaces Specified Painted:
1. Clean surfaces to remove grease, oil and other deterrents to paint adhesion in accordance with SSPC-SP 1 (Solvent Cleaning).
2. Spot coat abraded and damaged areas of zinc-coating which expose base metal on hot-dip zinc-coated items with MPI 18 (Organic Zinc Rich Coating). Prime or spot prime with MPI 134 (Waterborne Galvanized Primer) or MPI 135 (Non- Cementitious Galvanized Primer) depending on finish coat compatibility.

F. Masonry and Concrete:
1. Clean and remove dust, dirt, oil, grease efflorescence, form release agents, laitance, and other deterrents to paint adhesion.
2. Use emulsion type cleaning agents to remove oil, grease, paint and similar products. Use of solvents, acid, or steam is not permitted.
3. Remove loose mortar in masonry work.
4. Replace mortar and fill open joints, holes, cracks and depressions with new mortar specified in Section 04 05 13, MASONRY MORTARING. Do not fill weep holes. Finish to match adjacent surfaces.
5. Neutralize Concrete floors to be painted by washing with a solution of 1.4 Kg (3 pounds) of zinc sulfate crystals to 3.8 L (1 gallon) of water, allow to dry three days and brush thoroughly free of crystals.
6. Repair broken and spalled concrete edges with concrete patching compound to match adjacent surfaces as specified in CONCRETE Sections. Remove projections to level of adjacent surface by grinding or similar methods.

G. Gypsum Board:
1. Remove efflorescence, loose and chalking plaster or finishing materials.
2. Remove dust, dirt, and other deterrents to paint adhesion.
3. Fill holes, cracks, and other depressions with CID-A-A-1272A [Plaster, Gypsum (Spackling Compound) finished flush with adjacent surface, with texture to match texture of adjacent surface. Patch holes over 25 mm (1-inch) in diameter as specified in Section for plaster or gypsum board.

3.3 PAINT PREPARATION

A. Thoroughly mix painting materials to ensure uniformity of color, complete dispersion of pigment and uniform composition.

B. Do not thin unless necessary for application and when finish paint is used for body and prime coats. Use materials and quantities for thinning as specified in manufacturer's printed instructions.

C. Remove paint skins, then strain paint through commercial paint strainer to remove lumps and other particles.
D. Mix two component and two part paint and those requiring additives in such a manner as to uniformly blend as specified in manufacturer's printed instructions unless specified otherwise.
E. For tinting required to produce exact shades specified, use color pigment recommended by the paint manufacturer.

3.4 APPLICATION

A. Start of surface preparation or painting will be construed as acceptance of the surface as satisfactory for the application of materials.
B. Unless otherwise specified, apply paint in three coats; prime, body, and finish. When two coats applied to prime coat are the same, first coat applied over primer is body coat and second coat is finish coat.
C. Apply each coat evenly and cover substrate completely.
D. Allow not less than 48 hours between application of succeeding coats, except as allowed by manufacturer's printed instructions, and approved by Project Engineer.
E. Finish surfaces to show solid even color, free from runs, lumps, brushmarks, laps, holidays, or other defects.
F. Apply by brush, roller or spray, except as otherwise specified.
G. Do not spray paint in existing occupied spaces unless approved by Project Engineer, except in spaces sealed from existing occupied spaces.
    1. Apply painting materials specifically required by manufacturer to be applied by spraying.
    2. In areas, where paint is applied by spray, mask or enclose with polyethylene, or similar air tight material with edges and seams continuously sealed including items specified in WORK NOT PAINTED, motors, controls, telephone, and electrical equipment, fronts of sterilizes and other recessed equipment and similar prefinished items.
H. Do not paint in closed position operable items such as access doors and panels, window sashes, overhead doors, and similar items except overhead roll-up doors and shutters.

3.5 PRIME PAINTING

A. After surface preparation prime surfaces before application of body and finish coats, except as otherwise specified.
B. Spot prime and apply body coat to damaged and abraded painted surfaces before applying succeeding coats.
C. Additional field applied prime coats over shop or factory applied prime coats are not required except for exterior exposed steel apply an additional prime coat.

D. Prime rebates for stop and face glazing of wood, and for face glazing of steel.

E. Wood and Wood Particleboard:

1. Use same kind of primer specified for exposed face surface.
   a. Interior wood except for transparent finish: MPI 45 (Interior Primer Sealer) or MPI 46 (Interior Enamel Undercoat), thinned if recommended by manufacturer.
2. Back prime and seal ends of exterior woodwork, and edges of exterior plywood specified to be finished.

F. Metals except boilers, incinerator stacks, and engine exhaust pipes:

1. Steel and iron: MPI 95 (Fast Drying Metal Primer).
2. Zinc-coated steel and iron: MPI 134 (Waterborne Galvanized Primer).
3. Machinery not factory finished: MPI 9 (Exterior Alkyd Enamel (EO)).
4. Asphalt coated metal: MPI 1 (Aluminum Paint (AP)).
5. Metal over 94 degrees C. (200 degrees F), Boilers, Incinerator Stacks, and Engine Exhaust Pipes: MPI 22 (High Heat Resistant Coating (HR)).

G. Gypsum Board and Hardboard:

1. Surfaces scheduled to have MPI 53 (Interior Latex, Flat), MPI Gloss Level 1 LE)) MPI 52 (Interior Latex, MPI Gloss Level 3 (LE)); or MPI 54 (Interior Latex, Semi-Gloss, MPI Gloss Level 5 (LE)) finish: Use MPI 53 (Interior Latex, MPI Gloss Level 3 (LE)), MPI 52 (Interior Latex, MPI Gloss Level 3 (LE)) or MPI 54 (Interior Latex, Semi-Gloss, MPI Gloss Level 5 (LE)) respectively.
2. Primer: MPI 50(Interior Latex Primer Sealer) except use MPI 45 (Interior Primer Sealer) in shower and bathrooms.
3. Use MPI 101 (Cold Curing Epoxy Primer) for surfaces scheduled to receive MPI 98 (High Build Epoxy Coating) finish.

3.6 INTERIOR FINISHES

A. Apply following finish coats over prime coats in spaces or on surfaces specified in Section 09 06 00, SCHEDULE FOR FINISHES.

B. Metal Work:

1. Apply to exposed surfaces.
2. Omit body and finish coats on surfaces concealed after installation except electrical conduit containing conductors over 600 volts.
3. Ferrous Metal, Galvanized Metal, and Other Metals Scheduled:
   a. Apply two coats of MPI 54 (Interior Latex, Semi-Gloss) unless specified otherwise.

C. Gypsum Board:

1. One coat of MPI 45 (Interior Primer Sealer) plus one coat of MPI 139 (Interior High Performance Latex, MPI Gloss level 3 (LL)).

D. Wood:

1. Sanding:
   a. Use 220-grit sandpaper.
   b. Sand sealers and varnish between coats.
   c. Sand enough to scarify surface to assure good adhesion of subsequent coats, to level roughly applied sealer and varnish, and to knock off "whiskers" of any raised grain as well as dust particles.
2. Sealers:
   a. Apply sealers specified except sealer may be omitted where pigmented, penetrating, or wiping stains containing resins are used.
   b. Allow manufacturer's recommended drying time before sanding, but not less than 24 hours or 36 hours in damp or muggy weather.
   c. Sand as specified.
3. Paint Finish:
   a. One coat of MPI 46 (Interior Enamel Undercoat) plus one coat of MPI 54 (Interior Latex, Semi-Gloss (SG).

3.7 PAINT COLOR

A. Color and gloss of finish coats to match adjacent existing finish unless specified otherwise

B. Coat Colors:
   1. Color of priming coat: Lighter than body coat.
   2. Color of body coat: Lighter than finish coat.
   3. Color prime and body coats to not show through the finish coat and to mask surface imperfections or contrasts.

C. Painting, Caulking, Closures, and Fillers Adjacent to Casework:
   1. Paint to match color of casework where casework has a paint finish.
   2. Paint to match color of wall where casework is stainless steel, plastic laminate, or varnished wood.

3.8 BUILDING AND STRUCTURAL WORK FIELD PAINTING

A. Painting and finishing of interior and exterior work except as specified under paragraph 3.11 B.
   1. Painting and finishing of new and existing work including colors and gloss of finish selected As specified
   2. Painting of disturbed, damaged and repaired or patched surfaces when entire space is not scheduled for complete repainting or refinishing.
   3. Painting of ferrous metal and galvanized metal.
   4. Identity painting and safety painting.

B. Building and Structural Work **NOT TO BE PAINTED**:
   1. Concealed surfaces:
      a. UNDER NEW PAVING AND WATERPROOFING
   2. Existing Moving and operating parts:

a. Shafts, chains, gears, mechanical and electrical operators, linkages, and sprinkler heads, and sensing devices.
b. Tracks for overhead or coiling doors, shutters, and grilles.
c. Steam equipment

3. Labels:
a. Code required label, such as Underwriters Laboratories Inc., Inchcape Testing Services, Inc., or Factory Mutual Research Corporation.
b. Identification plates, instruction plates, performance rating, and nomenclature.

4. Galvanized metal:
a. Exterior chain link fence and gates, corrugated metal areaways, and gratings.
b. Gas Storage Racks.
c. Except where specifically specified to be painted.

5. Metal safety treads and nosings.
6. Gaskets.
7. Concrete curbs, gutters, pavements, retaining walls, exterior exposed foundations walls and interior walls in pipe basements.
8. Face brick.

3.9 PROTECTION CLEAN UP, AND TOUCH-UP

A. Protect work from paint droppings and spattering by use of masking, drop cloths, removal of items or by other approved methods.
B. Upon completion, clean paint from hardware, glass and other surfaces and items not required to be painted of paint drops or smears.
C. Before final inspection, touch-up or refinished in a manner to produce solid even color and finish texture, free from defects in work which was damaged or discolored.

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